American Water Works Association

Establishing A Secure & Resilient Water Sector

December 14-15, 2010
LWQTC

Overview

— **Key Drivers**
  – **Legislation**
  – **Presidential Directives**
— **AWWA & Sector Initiatives**
  – **Standards & Guidance**
  – **Mutual Aid & Assistance**
  – **Emergency Water Supply**
  – **Contamination Warning Systems**
  – **Cyber/Process Control Systems**
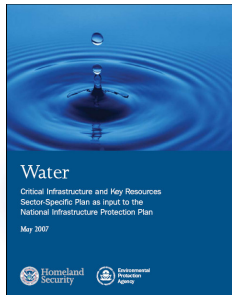
Legislative Drivers

— **Bioterrorism Act**
— **Patriot Act**
— **Homeland Security Act**
— **Implementing the Recommendations of the 9/11 Commission Act**
— **Chemical Facility Anti-Terrorism Standards (CFATS)**

Homeland Security Presidential Directives

— **HSPD-5: Management of Domestic Incidents**
  - **National Incident Management System (NIMS)**
  - **National Response Framework (NRF)**
— **HSPD-7: Critical Infrastructure Identification, Prioritization and Protection (replaces PDD-63)**
  - **National Infrastructure Protection Plan (NIPP)**
  - **Sector Specific Plans (SSP)**
— **HSPD-8: National Preparedness**
— **HSPD-9: Defense of Ag & Food**
— **HSPD-10: Biodefense for the 21st Century**
— **HSPD-12: Common Identification Standard**
— **HSPD-20: National Continuity Policy**

The Water Sector Vision

Water

Critical Infrastructure and Key Resources
Sector-Specific Plan as input to the
National Infrastructure Protection Plan

May 2007

Homeland Security
Environmental Protection Agency

— *A secure and resilient drinking water and wastewater infrastructure that provides clean and safe water as an integral part of daily life. This Vision assures the economic vitality of and public confidence in the nation's drinking water and wastewater through a layered defense of effective preparedness and security practices in the sector.*

SSP Goals

1. **Sustain protection of public health and the environment.**
2. **Recognize and reduce risks in the water sector.**
3. **Maintain a resilient infrastructure.**
4. **Increase communication, outreach, and public confidence.**

AWWA Standards & Guidance

1. ANSI/AWWA G430-09: Security Practices for Operations and Management
2. ANSI/ASME-ITI/AWWA J100-10 Risk Analysis and Management for Critical Asset Protection (RAMCAP) Standard for Risk and Resilience Management of Water and Wastewater Systems
3. AWWA Gxxx: Emergency Preparedness Practices
4. Selecting Disinfectants in a Security-Conscious Environment

ANSI/AWWA G430-09:
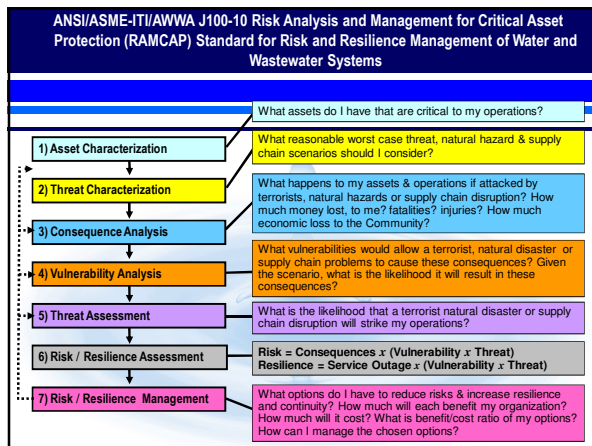## Security Practices for Operations and Management

Purpose: This standard defines the minimum requirements for a protective security program for a water or wastewater utility that will promote the protection of employee safety, public health, public safety, and public confidence.

This standard builds on the long-standing practice amongst utilities of utilizing a multiple barrier approach for the protection of public health and safety.

ANSI/AWWA G430-09:
Security Practices for Operations and Management

Requirements:
a) Explicit Commitment to Security
b) Security Culture
c) Defined Security Roles and Employee Expectations
d) Up-To-Date Assessment of Risk (Vulnerability)
e) Resources Dedicated to Security and Security Implementation Priorities
f) Access Control and Intrusion Detection
g) Contamination, Detection, Monitoring and Surveillance
h) Information Protection and Continuity
i) Design and Construction
j) Threat Level-Based Protocols
k) Emergency Response and Recovery Plans and Business Continuity Plan
l) Internal and External Communications
m) Partnerships
n) Verification

ANSI/ASME-ITI/AWWA J100-10 Risk Analysis and Management for Critical Asset Protection (RAMCAP) Standard for Risk and Resilience Management of Water and Wastewater Systems

	What assets do I have that are critical to my operations?
1) Asset Characterization	What reasonable worst case threat, natural hazard & supply chain scenarios should I consider?
2) Threat Characterization	What happens to my assets & operations if attacked by terrorists, natural hazards or supply chain disruption? How much money lost, to me? fatalities? injuries? How much economic loss to the Community?
3) Consequence Analysis	
4) Vulnerability Analysis	What vulnerabilities would allow a terrorist, natural disaster or supply chain problems to cause these consequences? Given the scenario, what is the likelihood it will result in these consequences?
5) Threat Assessment	What is the likelihood that a terrorist natural disaster or supply chain disruption will strike my operations?
6) Risk / Resilience Assessment	Risk = Consequences x (Vulnerability x Threat) Resilience = Service Outage x (Vulnerability x Threat)
7) Risk / Resilience Management	What options do I have to reduce risks & increase resilience and continuity? How much will each benefit my organization? How much will it cost? What is benefit/cost ratio of my options? How can I manage the chosen options?

GXXX: Emergency Preparedness Practices
(draft)

Purpose: This standard defines the minimum requirements for emergency preparedness for a water or wastewater utility. Emergency preparedness practices include the development of an emergency response plan (hazard evaluation, hazard mitigation, response planning, and mutual aid agreements), the evaluation of the emergency response plan through exercises, and the revision of the emergency response plan after exercises.

Selecting Disinfectants in a
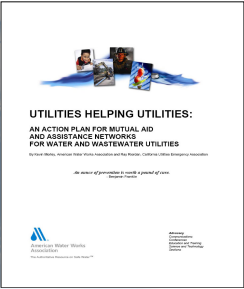## Security Conscious Environment

- Provide guidance to water, wastewater, and reuse utilities
- Framework to evaluate disinfection alternatives that:
  - Reflects local circumstances
  - Addresses utility's specific disinfection objectives
  - Provides framework to compare options consistently and transparently
  - Accounts for reliability, safety, and other key criteria
  - Reflects the need to incorporate risk communication within process
  - Scaleable across system sizes
  - Integrates risk-based performance measures for security based on CFATS
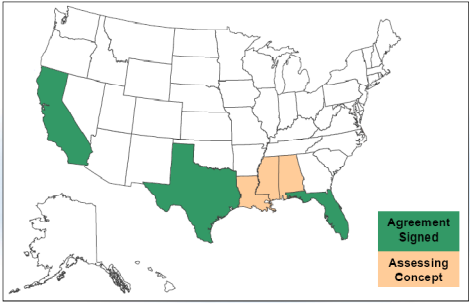
Resiliency Initiatives

— **Mutual Aid & Assistance**
  – **WARN**
  – **Resource Typing**
— **Emergency Water Supply**
  – **National Strategic Plan**
  – **Healthcare**
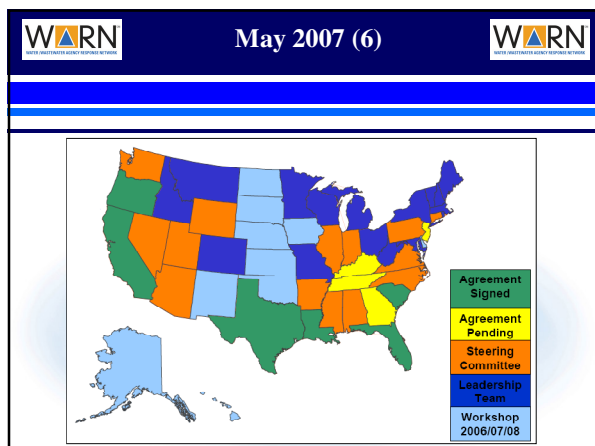— **Cyber/Process Control Systems**
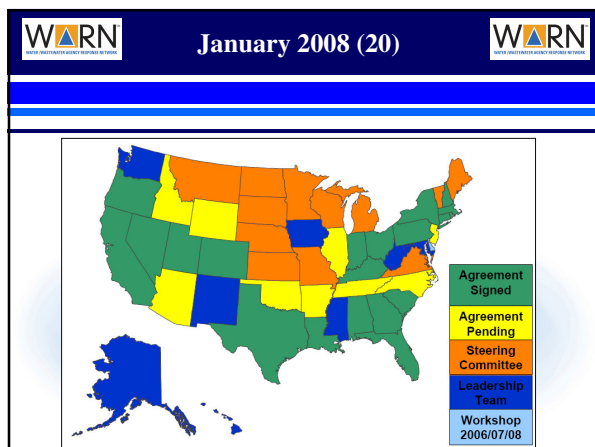

The WARN Action Plan
(March 2006)

— WARN Agreement
  – Voluntary
  – No Obligation
  – No cost
  – Liability/Workmans Comp
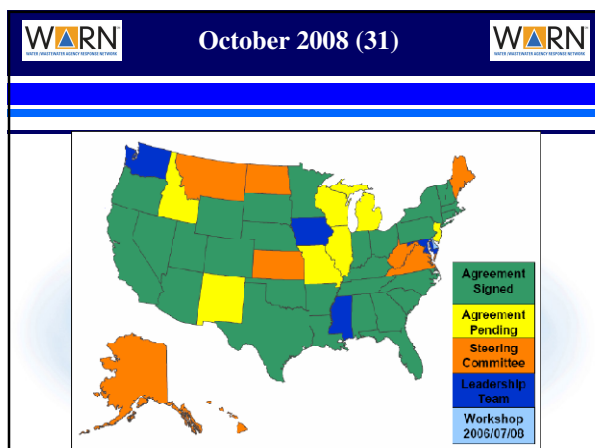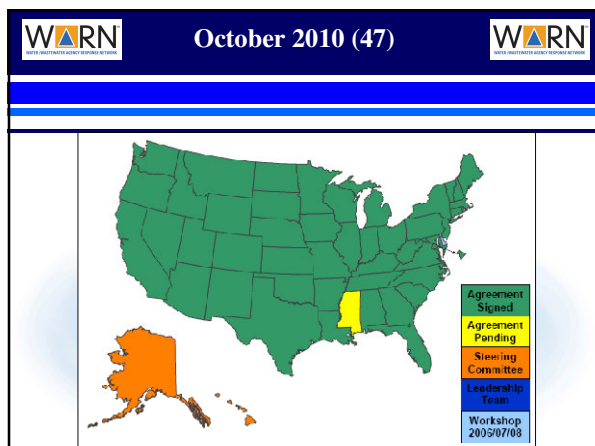 – Reimbursement process
  – Element of NIMS
  – All-Hazards

UTILITIES HELPING UTILITIES:

AN ACTION PLAN FOR MUTUAL AID
AND ASSISTANCE NETWORKS
FOR WATER AND WASTEWATER UTILITIES

An ounce of prevention is worth a pound of cure.

American Water Works Association

www.NationalWARN.org

WARN — April 2006 (3) — WARN

Agreement Signed

Assessing Concept

May 2007 (6)

January 2008 (20)

October 2008 (31)

October 2010 (47)

Legend:
- Agreement Signed
- Agreement Pending
- Steering Committee
- Leadership Team
- Workshop 2005/07/08

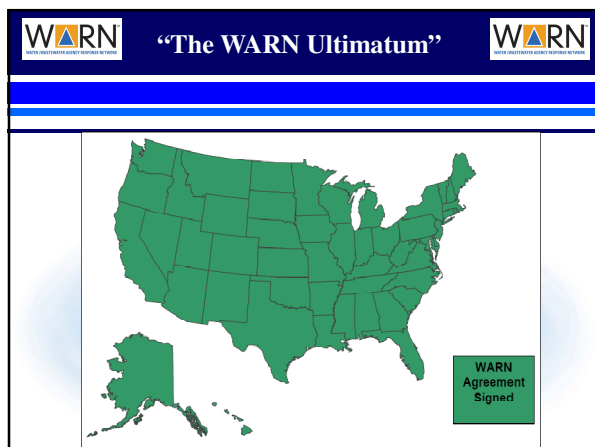## "The WARN Ultimatum"

WARN Agreement Signed

Emergency Water Supply

— **SDWA: 42 U.S.C. § 300g-2(a)(5)** requires States with primacy to adopt and implement an adequate plan for the provision of safe drinking water under emergency circumstances.

— **Bioterrorism Act of 2002: 42 U.S.C. § 300i-2(b)** requires the utility emergency response plan to include actions, procedures, and identification of equipment which can obviate or significantly lessen the impact of terrorist attacks or other intentional actions on the public health and the safety and supply of drinking water provided to communities and individuals.

— Reality of vulnerability to earthquakes, ice storms, hurricanes and infrastructure failure that have the potential to compromise the mission of the water utility.
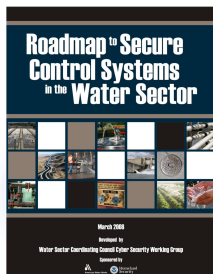
Emergency Water Supply (cont.)

— **National Strategic Plan for Emergency Water Supply**
- — EPA-NHSRC/AWWA collaboration
- — Provide guidance for utility preparedness
- — Develop recommendations to clarify roles and responsibilities under current or new ESF

— **Emergency Water Supply Planning for Hospitals and Health Care Facilities**
- — CDC/AWWA collaboration
- — Address gaps in Joint Commission standards

The Options

— Enhanced connections with neighboring water utilities
— Bottled water supplied locally or regionally (a common Federal response)
— Locally produced water
- – Packaging already treated water
- – Mobile treatment units
  - • Inject water into the existing distribution system
  - • Water packaging
  - • Temporary water tap distribution
- – Point of use treatment

Cyber Security

Roadmap to Secure Control Systems in the Water Sector

March 2008

Reviewed by Water Sector Coordinating Council Cyber Security Working Group

Sponsored by

Vision

In 10 years, industrial control systems for critical applications will be designed, installed, and maintained to operate with no loss of critical function during and after a cyber event.

Key Strategies

➢ Develop and Deploy ICS Security Programs
➢ Assess Risk
➢ Develop and Implement Protective Measures
➢ Partnership and Outreach

Additional Resources

Questions

Kevin M. Morley
Security & Preparedness Program Manager
AWWA – Government Affairs
1300 Eye Street, NW Suite 701W
Washington, DC 2005
202-628-8303 or kmorley@awwa.org

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Nashville, TN September 11-14, 2011

Advancing Security and Emergency Preparedness in the Water Sector